Exelon Generation Company, LLC
Dresden Nuclear Power Station
6500 North Dresden Road
Morris, IL 60450-9765

www.exeloncorp.com

Exelon Nuclear

10 CFR 50.73

August 27, 2004

SVPLTR: #04-0057

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Dresden Nuclear Power Station, Unit 2
Facility Operating License No. DRP-19
NRC Docket No. 50-237

Subject: Supplemental Licensee Event Report 2004-004-01, "Unit 2 Manual Scram Due To The Trip Of A Reactor Recirculation Pump"

Enclosed is Supplemental Licensee Event Report 2004-004-01, "Unit 2 Manual Scram Due To The Trip Of A Reactor Recirculation Pump," for Dresden Nuclear Power Station. This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), "Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section."

Should you have any questions concerning this report, please contact Jeff Hansen, Regulatory Assurance Manager, at (815) 416-2800.

Respectfully,

Danny G. Bost
Site Vice President
Dresden Nuclear Power Station

Enclosure
cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Dresden Nuclear Power Station

JE22

NRC FORM 366 (7-2001)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OBM NO. 3150-0104 EXP 7-31-2004
LICENSEE EVENT REPORT (LER)		Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Dresden Nuclear Power Station Unit 2	05000237	1 of 4

4. TITLE Unit 2 Manual Scram Due To The Trip Of A Reactor Recirculation Pump

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	N/A
04	28	2004	2004	– 004 –	01	08	27	2004	FACILITY NAME N/A	DOCKET NUMBER N/A

9. OPERATING MODE	1
10. POWER LEVEL	066

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)	X	50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
George Papanic Jr.	(815) 416-2815

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	AD	MO	G080	Yes					

14. SUPPLEMENTAL REPORT EXPECTED			15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On April 28, 2004, at 1536 hours (CDT), with Unit 2 at approximately 66 percent power in Mode 1, a manual scram was inserted by operations personnel due to the plant being in a region of the reactor's power to flow map that required an immediate scram. The power to flow condition was caused by the unexpected trip of the 2A Reactor Recirculation Pump and the manual scram was in accordance with immediate operator actions specified in procedure DOA 202.01, "Recirculation (RECIRC) Pump Trip – One Or Both Pumps." There were no Electromatic or Safety Relief valve actuations and no Emergency Core Cooling System initiations. Primary Containment Isolation System Group 2 and 3 isolations occurred as expected due to normal reactor water level decrease following the scram. All control rods fully inserted and all other systems responded to the manual scram as expected.

The root cause of the trip of the 2A Reactor Recirculation pump and the manual scram was attributed to a lack of detailed rewinding and acceptance test requirements in the Exelon large motor standard that governed the rewind of the 2A Reactor Recirculation pump motor. The corrective action to prevent recurrence is to revise the Exelon Nuclear Engineering Standard NES-EIC-40.01, "Large Motor (>2 kv) Repair Requirements," to address the B-Stage rewind process to incorporate detailed B-Stage rewinding and acceptance-testing requirements similar to the requirements of the Vacuum Pressurization Impregnation Process used during the manufacturing of the original motor.

1. FACILITY NAME	2. DOCKET NUMBER	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Dresden Nuclear Power Station Unit 2	05000237	2004	004	01	2 of 4

17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

Dresden Nuclear Power Station Unit 2 is a General Electric Company Boiling Water Reactor with a licensed maximum power level of 2957 megawatts thermal. The Energy Industry Identification System codes used in the text are identified as [XX].

A. Plant Conditions Prior to Event:

Unit: 02 Event Date: 4-28-2004 Event Time: 1536 CDT
Reactor Mode: 1 Mode Name: Power Operation Power Level: 66 percent
Reactor Coolant System Pressure: 1000 psig

B. Description of Event:

On April 28, 2004, at 1536 hours (CDT), with Unit 2 at approximately 66 percent power in Mode 1, a manual scram was inserted by operations personnel due to the plant being in a region of the reactor's power to flow map that required an immediate scram. The power to flow condition was caused by the unexpected trip of the 2A Reactor Recirculation Pump [P] and the manual scram was in accordance with immediate operator actions specified in procedure DOA 202.01, "Recirculation (RECIRC) Pump Trip – One Or Both Pumps." There were no Electromatic or Safety Relief valve actuations and no Emergency Core Cooling System initiations. Primary Containment Isolation System Group 2 and 3 isolations occurred as expected due to normal reactor water level decrease following the scram. All control rods fully inserted and all other systems responded to the manual scram as expected.

An ENS call was made on April 28, 2004, at 1750 hours (CDT) for the above-described event. The assigned ENS event number was 40713.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), "Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section." The manual actuation of the reactor protection system is listed in 10 CFR 50.73(a)(2)(iv)(B).

C. Cause of Event:

The root cause of the trip of the 2A Reactor Recirculation pump and the manual scram was attributed to a lack of detailed rewinding and acceptance test requirements in the Exelon large motor standard that governed the rewind of the 2A Reactor Recirculation pump motor.

The 2A Reactor Recirculation pump motor was replaced during a refueling outage in the fall of 1999. The replacement motor was a rewound motor that used a different process for rewinding than was used during initial manufacture. The original manufacturing processed used a Vacuum Pressurization Impregnation (VPI) process. This process first includes taping the electrical coils, series connections and leads with mica tape insulation. Then the motor stator is placed in a VPI tank where a vacuum is created to remove all voids, followed by pressurization and epoxy resin injection to completely saturate and seal the motor windings. The rewound motor used a B-Stage process. This process is used when it is not possible to use the VPI process. The VPI process could not be used to rewind the motor, as there was not a VPI vendor to work on a large contaminated motor. The B-Stage process uses mica tape impregnated with epoxy resin on the motor coils. The coils are heated in an oven allowing the epoxy resin to form a sealed bond from the inside out. The B-Stage process does not control how the series and lead connections are insulated. The individual motor shop process governs this insulation.

An inspection of the failed 2A Reactor Recirculation pump motor revealed that the winding failure initiated in the series connection end turn where the copper strands from the coil are brazed together. The joint that failed was

melted in the failure, however, a nearby un-failed joint provided the likely configuration. The joints were brazed within a copper sleeve with strands extending outside the sleeves forming a relatively sharp corner. The insulating mica tape was applied directly over this corner. Wrapping the tape over the corner resulted in thinning of the tape, potentially damaging the tape layers during installation and resulting in a stressed region likely to be damaged during motor operation due to movement. The insulating mica tape appears to have been applied with a dry-lapping process, with each layer applied directly over the other without a bonding agent. Applied over an irregular surface, this method can result in voids and allows relative movement of individual layers.

The series joint at the point of failure was at the top of the bend in the series connection. The bends were taped such that the bottom of the bend received full overlaps while the tops of the bends were half-lapped. The location of the failure at the top of the bend had the thinnest layering.

The rewinding of the 2A Reactor Recirculation pump motor was performed in accordance with the ComEd, "Large Motor Repair Standard 9894047.9159." The standard had a very detailed rewind and acceptance testing requirements for rewinding motors using the VPI process but did not have the same level of detail for the B-Stage process. The lack of detailed rewind and acceptance testing requirements in the standard allowed the motor vendor to provide minimum insulation at the series connection. When the motor rewind was complete, the stator had a wet High-Pot test performed before final assembly. The pre-test found that there were some inadequate seal spots at the series connections location. The series connections were repaired and the stator passed the next test.

D. Safety Analysis:

The safety significance of the Reactor Recirculation pump trip and the resulting manual scram event was minimal. The transient response of the plant has been analyzed for the trip of one or two Reactor Recirculation pump and the results are contained in Chapter 15 of the Dresden Update Final Safety Analysis Report. The manual scram of the plant was in accordance with an approved procedure. There were no Electromatic or Safety Relief valve actuations and no Emergency Core Cooling System initiations. Primary Containment Isolation System Group 2 and 3 isolations occurred as expected due to normal reactor water level decrease following the scram. All control rods fully inserted and all other systems responded to the manual scram as expected.

Therefore, the consequences of this event had minimal impact on the health and safety of the public and reactor safety.

E. Corrective Actions:

The failed Reactor Recirculation pump motor was replaced.

The failed Reactor Recirculation pump motor was shipped on May 17, 2004, to a vendor's maintenance shop for evaluation. The vendor's evaluation report was received on August 9, 2004

Two outstanding purchase orders for the rewinding of two Dresden Reactor Recirculation pump motors were revised to include enhanced installation and testing requirements.

Exelon Nuclear Engineering Standard NES-EIC-40.01, "Large Motor (>2 kv) Repair Requirements," will be revised to incorporate B-Stage installation and testing requirements similar to the requirements for the VPI process.

1. FACILITY NAME	2. DOCKET NUMBER	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Dresden Nuclear Power Station Unit 2	05000237	2004	004	01	4 of 4

17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

F. Previous Occurrences:

A review of Dresden Nuclear Power Station Licensee Event Reports (LERs) and operating experience over the previous five years did not find any similar occurrences associated with a failed Reactor Recirculation pump.

G. Component Failure Data:

General Electric 5770 HP Motor, Model 5K26376AG1